



Burn & Amniosin™

- **Amniotic membrane (AM)** has been recently proposed as a cost effective material for wound dressing. As it originates from ectoderm, its features are similar to human skin and hence could prevent dehydration, trauma, and associated infection commonly observed in disrupted skin wounds (1).

Biological skin substitutes (such as **Amniosin™**) represent a **Golden Standard** for the temporary covering of burns. Biological skin substitutes should have the following qualities:

- ▶ Adhere to the burned surface;
- ▶ Enable low bacterial growth or to prevent subsequent bacterial colonization of the burned surface;
- ▶ Reduce the loss of fluids, microelements and proteins from the burned surface;
- ▶ Enable good permeability of gases and liquids, from the surface of the burn to the tissue around;
- ▶ Decrease the possibility of the creation of scars or keloids in the process of healing;
- ▶ Decrease the pain and to increase the comfort of the patient;
- ▶ Be easily applicable and removable(2).

Properties in Burn

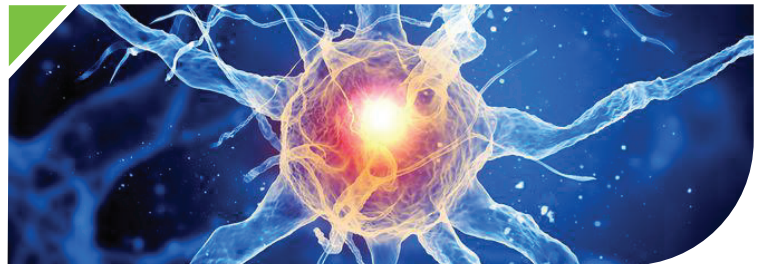


- **Promoter of Epithelization:**

The components of Amniosin™ (described in folder) have significant effects on epithelial regrowth(3). Growth factors extravasated and accumulated in the interface of biologic dressing and abraded epidermis. The moisture and suitable interface could hasten the wound healing process and epithelization(4).

- **Analgesic Properties:**

Amniosin™ dressing stopped the contact to the environment of lesions-like burns by covering the exposed nerve endings. Several authors discussed this topic as reason for immediate pain relief after AM coverage(3).



- **Protein/Fluid Loss Protection:** The adherence of Amniosin™ on wound beds within 8 to 16 hours is likely to be the factor which helped to prevent infection and limits the loss of fluid mainly in burns(3).



- **Non-immunogenic:**

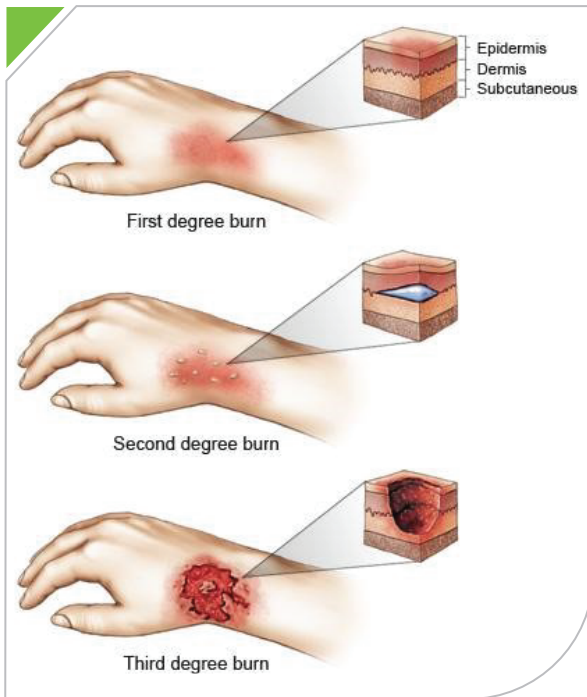
Amniosin™ does not produce the usual histo-compatible antigens: HLA-A, B or DR, So Amniosin™ does not indicate immunological reaction after transplantation(2).

- **Scar prevention:** Histologically, the Amniosin™ consists of a thin cubical epithelium, a thick basal membrane and an avascular stromal matrix. The basal side of the Amniosin™ is an ideal kind of substrate which helps the growth of the epithelial cells by prolonging their life and maintaining the clonogenicity. Also, few factors of growth are identified in the amnion membrane. The stromal side of the Amniosin™ contains a rare matrixiel component which suppress fibroblast proliferation. This action explains why transplantation of the Amniosin™ helps the reduction of the cicatrix during epithelialization (2,3)

- ▶ Amniosin™ basic properties such as below make amnion especially attractive for use in the pediatric burn population

- ▶ Thinness
- ▶ Pliability
- ▶ Moldability
- ▶ Durability
- ▶ Ability to be easily removed(5)

Uses in burn



● Donor Sites:

Burn wounds are usually covered with split-thickness skin grafts, which cause donor site wounds on their part.

The donor site was painful and caused immobility of patients and also prone those to infection, hypertrophic scar formation and changes in color, can increase hospitalization period or even can be the indication for later cosmetic surgery. Immobility can cause deep vein thrombosis (DVT), and respiratory, gastrointestinal, endocrine and electrolyte disorders(4).

▶ AM donor wounds treating (compared to conventional clinical dressings) caused:

- ▶ Less pain
- ▶ Less infection(3)
- ▶ Decrease in number of dressing changes
- ▶ Decrease in duration of wound healing about 5days(1)
- ▶ Improvement of move score
- ▶ Rapid epithelization
- ▶ Earlier patients discharge(4).

● Partial-Thickness Burns (1st & 2nd degree):

The use of AM in 1st & 2nd degree burns has frequently been published in the last two decades.

Fresh AM compared to silver Sulphadiazine cream in 90 patients partial thickness burns showed:

- ▶ Less pain
- ▶ Less oozing
- ▶ Less scar formation
- ▶ Improve healing time about 10days.

Observation in superficial burns:

- ▶ Reduction of fluid and protein loss
- ▶ No painful dressing changes
- ▶ Development of a strong epithelium

In conclusion these below advantages are highlighted and attributed to AM:

- ▶ Further wound adherence
- ▶ Easy application
- ▶ Maintenance of a moist wound environment(3).

● Full-Thickness Burns (3rd degree):

The use of AM in 3rd degree burns was highlighted because of:

- ▶ Reduced exudation
- ▶ Reduced induration
- ▶ More comfort
- ▶ Less pain
- ▶ Good reepithelization(3).

Amniotic membrane used as an adjunct in split thickness skin grafting is a novel modality which significantly reduces scar formation and itching that can be greatly distressing to burn patients(6);

54 patients (108 limbs) with 2nd and 3rd degree burns received split-thickness skin graft. In one group skin graft covered with AM and another traditionally fixed with skin staples (control group). After 6 months, (P < 0.001):

- ▶ %59.25 less itching in AM group vs control (%1.85),
- ▶ %64.81 less hypertrophic scar formation in AM group vs control (%3.70)(6).

References:

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